

Remarks

Status of the Application

Claims 257-277 were pending in the application at the time the Office Action was mailed. Claims 257-277 were rejected. No claims were allowed. Upon entry of this Response, claims 257, 263, 264, 267, and 271 will have been amended, and no claims will have been added or canceled. Therefore, claims 257-277 as amended will be pending. Entry of this Response and consideration of these claims is respectfully requested.

Rejections Under 35 U.S.C. §102

In the Office Action, claims 257-262, 269 and 270 were rejected under 35 U.S.C. 102(e) as being anticipated by Krylov (US 6,658,889). This rejection is improper because Krylov fails to teach several limitations present in independent claim 257 from which the remainder of the claims rejected under this section depend. The failure to teach these limitations is described below.

Krylov fails to teach a "concentrate discharge system configured to discharge the concentrate after it has been diluted from the first sea-going vessel into the body of seawater."

The Office Action incorrectly argues that Krylov describes a concentrate discharge system as presently claimed. In particular, the Office Action points to the WB (waste brine) of Fig. 1 in support of its argument. Nowhere in Fig. 1, however, does Krylov teach any structure for discharging concentrate into a body of seawater. *Cf.* the concentrate discharge systems 207 shown in Figs. 4, 6, and 7 of the present application. The WB component of the embodiment of Fig. 1 is described in the specification at Col. 5, lns. 31-32 which merely indicates "...waste
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brine is transported to a collecting tank 12 or fish tanks FT (Fig. 9).” In other sections, Krylov indicates that WB is subsequently mixed with ice to form low temperature ice slush advantageous for storing freshly caught fish. The disposition of this ice slush – fish mixture is not described anywhere in the reference. Because the purpose of the described process is to preserve fresh fish, the most logical inference is that the ice slush – fish mixture is off-loaded from the ship to a land-based facility that accepts the fish for future sale. In comparison, it would be illogical to infer that the ice slush would be disposed of at sea prior to the fish being off-loaded as this would unnecessarily expose the fish to higher temperatures.

Although it is abundantly clear that Krylov does not expressly teach any structure corresponding to the limitation of a “concentrate discharge system configured to discharge the concentrate after it has been diluted from the first sea-going vessel into the body of seawater,” should the examiner argue that such component is inherently taught by Krylov, in addition to the foregoing, Applicants point to MPEP §2112 which indicates “ ‘[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.’ *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)” and “[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).”

Krylov fails to teach a “mixing system in communication with the membrane-based water desalination system and the concentrate discharge system and configured to dilute the concentrate with seawater before the concentrate is discharged into the body of seawater via the

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concentrate discharge system."

The Office Action contends that Krylov's "ice-slush maker with additional seawater" is equivalent to the mixing system recited in claim 257. This is incorrect because, for the reasons provided above, Krylov fails to teach the concentrate discharge system of the claimed system, and therefore, cannot possibly teach a mixing system in communication with a concentrate discharge system "configured to discharge the concentrate after it has been diluted from the first sea-going vessel into the body of seawater."

Even if this were not the case, Krylov still does not teach the mixing system of claim 257 because Krylov does not teach an equivalent mixing system in an enabling fashion. The Office Action points to Krylov's Abstract in support of this rejection which in pertinent part states "[a] chiller tube produces ice slush from the sea water mixed with waste brine." Although Krylov makes this statement, it does not describe a chiller tube as such in an enabling fashion, and cannot therefore anticipate the present invention. See *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968) ("In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure'..."). In support of this, Krylov's detailed description refers only to cooling WB or seawater in the ice slush tube. E.g. at Col. 5, lns 9 and 17; Col. 6, lns. 43, 49 and 60; and Col. 7, ln.1. The detailed description never refers to mixing WB with seawater and never provides any reasoning why such a mixture would be useful or desirable. Although the embodiment of Fig. 1 apparently shows a common line through which WB or seawater can flow into the slush tube, it does not expressly show mixing of such brine with seawater in either the common line or the slush tube. In describing Fig. 1, the detailed description also does not teach mixing of such brine with seawater in either the common line or

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the slush tube.

Krylov fails to teach a "desalinated water transfer system configured to transfer desalinated water from the membrane-based water desalination system to a means for delivering desalinated water from the first sea-going vessel to a land-based distribution system."

The Office Action incorrectly states that "[t]he system of the reference includes a desalinated water transfer system (a tank and outlet control valves 3 and 9) which also capable of transfer of the of desalinated water to a land-based transfer system." While Krylov describes a potable water storage tank 3 (at Col. 5, ln. 31), it does not describe any component 9. Fig. 1 shows a component 9 which might be a pump (*cf.* submersible pump 8). Fig. 1 also shows what appear to be two outlet valves and lines- although they are not shown communicating with any other component. Because Krylov clearly does not expressly teach a "desalinated water transfer system configured to transfer desalinated water from the membrane-based water desalination to a means for delivering desalinated water from the first sea-going vessel to a land-based distribution system," it does not anticipate the present invention.

An argument that it can be inferred that the two outlet valves and lines are intended to communicate with a means for delivering desalinated water to a land-based distribution system is illogical. To arrive at Applicants' desalinated water transfer system from Krylov, one would have to show that the two outlet lines from water storage tank 3 lead to a device capable of transferring water to another device capable of transferring the water to a land-based system. There, however, would be no reason to assume that this would be the case because Krylov's device is arranged to only produce such a small amount of potable water that transferring such small amount to a land-based distribution system would be impractical and essentially useless for

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any practical purpose. See, Krylov Col. 8, ln. 32 (indicating that the apparatus makes about 400 gallons per day of potable water –an amount perhaps suitable for onboard use on a small fishing vessel).

Rejection of claims 258-260 is incorrect as Krylov does not teach a mixing tank

As described above, Krylov's ice-slush tube is not a mixing tank because it is not configured or suitable for mixing WB and seawater. Regarding claim 259, Applicants dispute that Krylov's chiller conduits and scraper are equivalents of "a series of baffles" and "a mixing barrier." Cf. the very clear structural differences between the pertinent components in the embodiments shown in Figs. 9-12 of the present application versus those shown in Fig. 5A of Krylov. Regarding claim 260, Krylov fails to disclose two separate structures corresponding to a concentrate inlet and a seawater intake. Rather Krylov teaches a single inlet for both seawater and WB (likely for the reason that these were never intended to be mixed in the ice-slush tube).

Rejection of claim 261 is incorrect

Applicants' do not see how any of the components of the embodiments shown in Krylov's 5A or 5B could properly be construed as a high speed paddle mixer.

Rejection of claim 262 is incorrect

The Office Action alleges that Krylov's single inlet for both seawater and WB is a static mixer. However, nowhere in Krylov is this expressly described. Moreover, for the reasons presented above, it is unlikely that the valves controlling seawater and WB flow into the shared inlet would be open at the same time.

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Means for delivering desalinated water

The Office Action indicates that the clause "means for delivering desalinated water from the...vessel to a land-based distribution system" was not considered part of the claimed apparatus. Upon entry of this Response, claims 263, 264, and 267 will have been amended to include the foregoing clause as a limitation, and claim 267 will have been amended to also indicate that the land-based distribution system is a claim limitation.

None of the present claims are anticipated by Krylov

Because none of the pending claims are anticipated by Krylov, entry of this Response and withdrawal of all §102 rejections is respectfully requested.

Rejections Under 35 U.S.C. §103

Claims 257-262 and 264-277 were rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Krylov and Bosley (US 6,348,148). Additionally, claim 263 was rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Krylov, Bosley and Bailie (US 4,356,785).

The Office Action admits that Bosley fails to teach a desalination system installed on a sea-going vessel, diluting concentrate with seawater before discharge, a sea-floor embedded pipeline, and the capacity to produce 10-100 million gallons of desalinated water per day. To supply these missing elements, the Office Action relies on Krylov for a system installed on a sea-going vessel, *In re Fout* for the proposition that a pipeline running across the seafloor is equivalent to a seafloor-embedded pipeline for the purpose of patentability, *In re Rose* and other

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cases for the proposition that it would have been obvious to scale up Bosley's apparatus to reach a given capacity. The Office Action further argues in the alternative that, although Krylov differs from the claimed invention "in the recitation of the various ways of transferring desalinated water to shore," it would have been obvious to use the teachings of Bosley for this purpose.

Even if Krylov, Bosley, and Bailie were properly combinable, the resulting combination would still not teach all limitations in any of the present claims

Among the criteria for establishing a prima facie case of obviousness, the combined prior art references must teach or suggest all claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The combination of Krylov, Bosley, and Bailie fails to teach, among other things, a "concentrate discharge system configured to discharge the concentrate after it has been diluted from the first sea-going vessel into the body of seawater," or a "mixing system in communication with the membrane-based water desalination system and the concentrate discharge system and configured to dilute the concentrate with seawater before the concentrate is discharged into the body of seawater via the concentrate discharge system." Krylov's failure to teach these two elements is described above. Bosley describes a concentrate discharge system that discharges undiluted concentrate directly into the surrounding body of water, but not one "configured to discharge the concentrate after it has been diluted from the first sea-going vessel into the body of seawater." Bosley, in fact, teaches away from the desirability of diluting concentrate before its discharge to mitigate any environmental damage. See Bosley at Col. 4, lns. 11-14 ("The present invention allows an offshore desalinization facility to release its brine into mid-water, where *mixing with the ocean current* is more efficient, with fewer effects

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upon bottom-dwelling flora and fauna.”). As the Office Action admits, Bosley also does not teach a mixing system configured to dilute concentrate with seawater before discharge into the body of seawater. Bailie does not describe either a concentrate discharge system or a mixing system as in the pending claims.

Krylov, Bosley, and Bailie are not properly combinable for the purposes of §103 because the prior art lacks a teaching or suggestion to combine the references and the proposed modification would render the prior art unsatisfactory for its intended purpose

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992).

Regarding the teaching or suggestion to combine Krylov and Bosley, the Office Action states:

Regarding the sea-going vessel and mixing the concentrate with seawater before discharge: Krylov teaches a desalination system on a fishing ship having the concentrate mixed with seawater as claimed.... It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Krylov in the teaching of Bosley to have the installation on a moving vessel and to have desalinated water production as secondary to an application such as the slush making of the brine because the combination is very useful in making stable slush as seen in figure 8 of Krylov (stable slush at a higher concentration).

Respectfully, Applicants have carefully read the foregoing and frankly cannot comprehend just exactly what the examiner is trying to convey regarding the combination of Krylov and Bosley. Clarification is requested. For the purpose of this response, Applicants have assumed that the Office Action is arguing that Bosley lacks a teaching of (i) a desalination system installed on a

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sea-going vessel and (ii) a device or step for mixing the concentrate with sea water before discharge, and that Krylov supplies these missing elements.

As to the motivation or suggestion to combine these references, Applicants understand the Office Action is arguing that somehow the combination would result in a process of making more stable ice slush. Applicants do not understand how such a combination would result in a more stable slush and do not find that either reference teaches a need to improve the slush made by the Krylov process or a teaching of how this could be achieved. Furthermore, after carefully reviewing Bosley and Krylov, Applicants did not find any suggestion that either of the systems taught therein could be improved by incorporating technology from the other reference. Applicants also could not find in either Bosley, Krylov, or Bailie a teaching or suggestion to combine two or more of these references.

Regarding Bosley not teaching the claimed (claim 276) 10 to 100 million gallons per day capacity, the Office Action relies on legal precedent for the proposition that mere scaling up of a prior art process does not impart patentability to a claim. For the reasons presented above, the presently claimed process is not a prior art process and, in fact, operates differently than the process of Bosley or Krylov. See, e.g., *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984) (where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device).

The Office Action alternatively argues that Krylov teaches all limitations in the claims rejected under this section with the exception of the various ways for transferring desalinated

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water to shore, but that Bosley supplies this missing teaching. For the reasons presented above it is clear that Krylov does not teach all the limitations except the ways of transferring desalinated water to shore. To reiterate, Krylov fails to teach the subject concentrate discharge system, mixing system, and desalinated water transfer system.

In addition to the foregoing, the proposed combination of Krylov and Bosley is improper because the resulting combination would result in a system inoperable for its intended purpose. See *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (finding no suggestion to modify a prior art device where the modifications would render the device inoperable for its intended purpose). Krylov teaches a fishing vessel having on-board a combination water desalination/ice slush making apparatus where the desalinated water output capacity is about 400 gallons per day and the ice slush is used to preserve fish contained in a hold of the fishing vessel. Bosley teaches a completely unrelated apparatus, namely, a mostly submerged, water pressure-driven, reverse osmosis-based water desalination system. The physical incorporation of Bosley's system into/onto Krylov's fishing vessel would yield an apparatus inoperable for the intended purposes of either Bosley's or Krylov's technology. For instance, because Bosley's apparatus is relatively large and mostly submerged it would not be compatible with fishing vessels such as that described by Krylov. As one example, Bosley indicates that its several pressure hulls are submerged at a depth at which the ambient water pressure is several atmospheres (see Col. 2, lns. 60-61) – a set up that would undoubtedly interfere with the fish catching operation of Krylov's vessel. As another example, Krylov's slush tube requires the input of WB resulting from the reverse osmosis process, but Bosley's technology disposes of its WB deep under the sea's surface using gravity. Re-orienting Bosley's apparatus so that it could feed WB into Krylov's slush tube would not only be an incredible feat

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of engineering but also would almost certainly disrupt the water-pressure and gravity forces necessary to operate Bosley's device. For the same reason, adding the transfer vessel of Bailie would not remedy the foregoing operability issues.

None of the present claims are rendered obvious by the one or more of Krylov, Bosley, or Bailie.

For the foregoing reasons, each of the pending claims is patentable over any one of, or any combination of, Krylov, Bosley, or Bailie. Accordingly, entry of this Response and withdrawal of all §103 rejections is respectfully requested.


Conclusion

The claims presented in this response are supported throughout the specification and are patentable over the prior art. No new matter has been added. This application is now in full condition for allowance. Accordingly, Applicants respectfully request entry of this Response, and reconsideration and allowance of the claims. The Commissioner is hereby authorized to charge any underpayment or credit any overpayment of fees under 37 CFR 1.16 or 1.17 as required by this paper to Deposit Account 50-3110.

The examiner is cordially invited to call the undersigned if clarification is needed on any matter within this Response, or if the examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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